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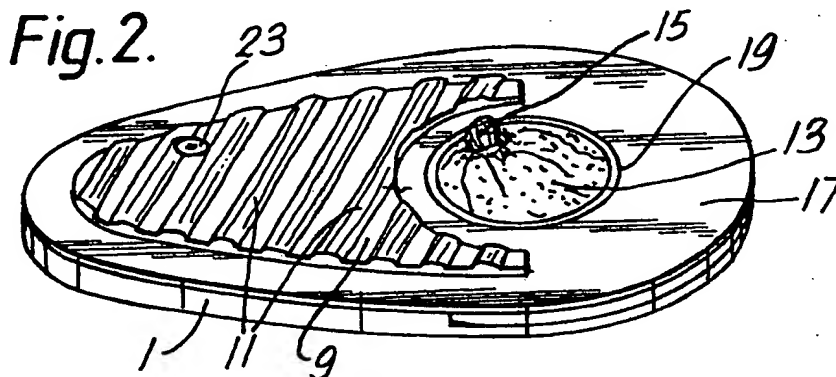
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(54) Breast palpation teaching aid

(57) A breast palpation teaching aid which includes a flexible part modelling a breast formed by an envelope part-filled with silicone and including some lumps of harder material in the gel. The flexible part is mounted on a base unit (1) which includes a plate (9) shaped with ridges (11) representing the rib-cage, and a rotatable disc (13) carrying a lump (15) which represents a tumour. The lump (15) and ridges (11) can be felt through the flexible breast model when it is palpated. The position of the lump (15) can be moved by rotation of the disc (13). The device includes a light (23) for illuminating one of the lumps provided in the gel of the flexible breast model.



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Fig.1.

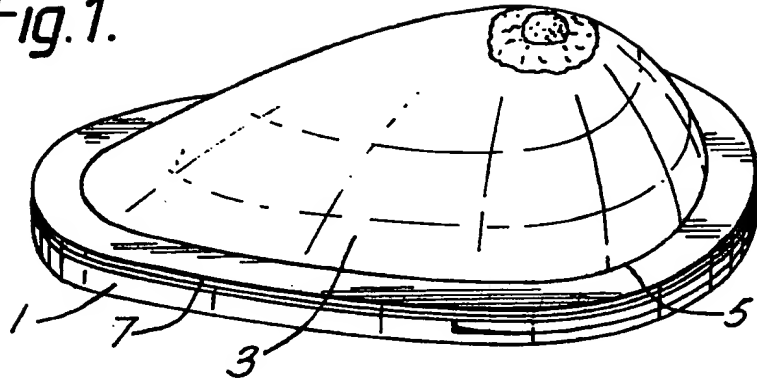


Fig.2.

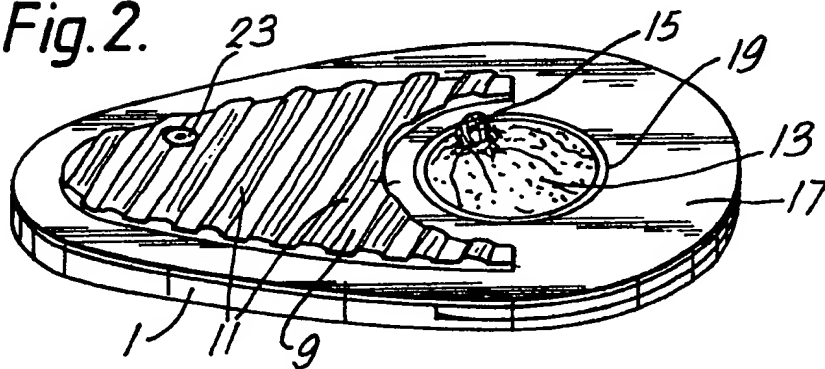


Fig.3.

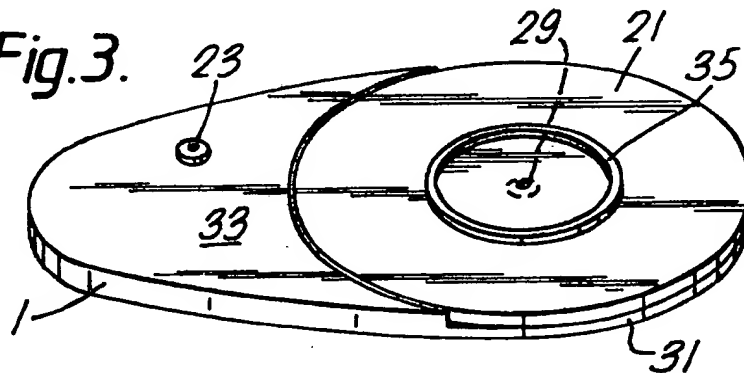
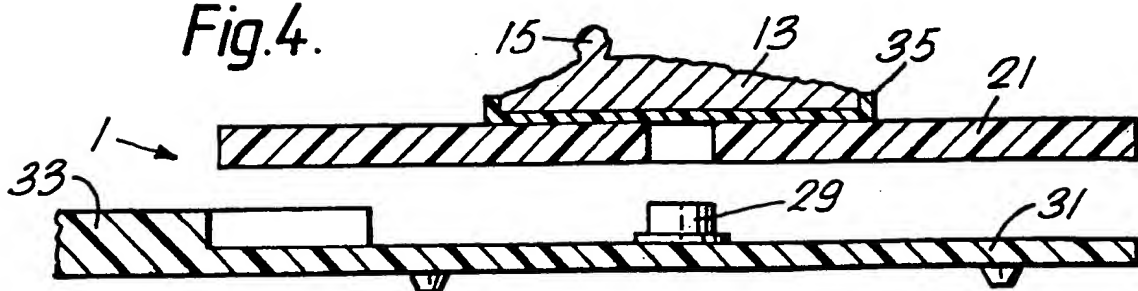


Fig.4.



- 1 -

BREAST PALPATION TEACHING AID

This invention relates to an improved breast palpation teaching aid.

5 Female breast self-examination is an important part of health-care education and screening programs for breast cancer. Women need to be taught the most effective way of self-examination; doctors, nurses and other personnel involved in breast clinics also have to be reliably trained
10 and should be able to convey their skills to patients.

A variety of soft plastic or rubber breast palpation teaching aid devices have been proposed which comprise a uniform body of soft plastic or rubber modelled in a stylised representation of a female breast and which
15 includes a number of hard lumps of material simulating tumors. The value of these devices is limited because the appearance and texture of the model are very different to that of a natural breast - partly because of the material used and partly because the model is not, as a natural
20 breast is, mounted on the chest wall which has a relatively complex surface shape, and secondly the lumps are in a fixed configuration so that once the examiner has identified the lumps, the teaching value of the device is diminished.

According to a first aspect of the present
25 invention there is provided a breast palpation teaching aid comprising a flexible and deformable outer part modelling a female breast and attached to a base over at least one lump of material which is harder than that of said outer part, and is mounted on the base and movable to different
30 positions on the base.

With this aspect of the present invention therefore the value of the teaching aid is not diminished with repeated use because the construction adopted allows the position of the lumps to be changed.

35 The lump may be eccentrically mounted on a

rotatable mount attached to the base and, to provide further flexibility in positioning, can be formed by a replaceable insert received by the mount. The lump may also be mounted such that its height above the base can be varied, again to vary the feel of the lump through the flexible outer part modelling the breast.

According to a second aspect the present invention provides a breast palpation teaching aid comprising: a first part modelling a female breast and comprising a flexible envelope containing a deformable material and at least one lump harder than said material, and a second part forming a base to which the periphery of the envelope is attached.

The base may be an assembly of parts fabricated from perspex or other suitable supportive material.

This type of construction has a significantly improved appearance and texture over the previously proposed teaching aids and thus it gives pupils a more realistic impression of breast examination.

Part of the central region of the first part may be left unattached to the base whereby can hang away from the base when supported at a convenient angle to better model the shape and deformability of a natural breast. This may be achieved by means of a stand which supports the teaching aid at an appropriate angle. Further, the volume of deformable material in the envelope may be only 90 to 99%, or more preferably 95 to 99% or yet more preferably 97% or 98% of the volume of the envelope. This further improves the texture and appearance of the breast as compared with the prior art devices.

The deformable material inside the envelope may be silicone and the first part may conveniently be a breast prosthesis modified by removal of an amount of silicone - for instance 1 to 10% or more preferably 1 to 5% or more preferably 2 to 3% of the original volume of silicon. A typical breast prosthesis have a volume of between 250 and

600 cm³ and so typically 5 to 15 cm³ will be removed.

The first and second aspects of the invention may be combined in the single device which has the advantages of a better texture and appearance and whose value is not
5 diminished by long term use.

With either aspect or in a combined device at least part of the base may be shaped to represent the chest wall, eg, by being shaped to model the exterior surface of the rib cage.

10 The teaching aid may also include a light to illuminate one of the lumps and the light may be operable in response to palpation of the lump. This feature enhances the value of the device as a teaching aid by indicating to users that lumps are present in the model and can also
15 indicate the precise position of the lump when it is palpated.

The invention will be further described by way of non-limitative example with reference to the accompanying drawings in which:-

20 Figure 1 is a perspective view of an embodiment of the invention;

Figure 2 is a view of the base unit of the embodiment of Figure 1;

Figure 3 is a view of part of the base unit of the
25 embodiment of Figure 1; and

Figure 4 is a cross sectional view of part of the base unit of Figure 1.

As shown in Figure 1 the device comprises a base 1 made of a rigid material such as perspex to which is
30 attached a flexible part 3 which models the female breast. The flexible part is attached to the base around its periphery by adhesive cement (or other means) to a perspex flange 7 which is, in turn, mounted on the base 1. The bulk of the breast model protrudes upwards through the flange 7
35 to present a breast form having a natural appearance.

The flexible part 3, in this embodiment, is a modified breast prosthesis. Protheses are known which comprise a flexible outer envelope having the texture of skin the envelope being filled with silicone. The filled
5 envelope is flexible and is shaped to have a hollow back so that when in the vertical position it hangs in the manner of a natural breast. For the purposes of the present invention the prosthesis is modified by the removal of 5 to 15 cm³ of
10 silicone, this being in the region of 1 to 5%, or about 2 to 2.5%, of the entire volume of silicone in the envelope and this gives the device a more realistic feel when used as a teaching aid (in the original prosthesis it is the appearance rather than the feel which is the primary consideration).

15 The breast prosthesis is further modified in that it contains a number of soft rubber lumps (or lumps made from another similar material) which remain in fixed positions within the silicone. A light 23 is provided in the base unit for illuminating one of the fixed position
20 lumps in the prosthesis. In this embodiment the light 23 can simply be switched on and off as desired though in an alternative embodiment the light can be arranged to be switched on when the lump above it is palpated. The positioning of the light in the base unit below the
25 prosthesis means that the illuminated lump appears as a dark shadow in an illuminated region in the breast which assists the student in locating the lump or confirming his inspection.

Figure 2 shows the base unit with the perspex
30 flange and flexible breast model removed. Mounted on a top-plate 17 bolted to the base 1 is a shaped insert 9 formed from wax, plastic, rubber, perspex or acrylic or the like which has its upper surface shaped into the form of the rib cage with several "ribs" 11 extending across it. As is
35 apparent from Figure 1 this part is covered, in use, by the

flexible breast model but because of the construction of the flexible part can still be felt through it and gives an accurate impression of the feel of a natural breast.

Attached to a rotatable mount 21 (shown in Figure 3 and 4) is a replaceable insert 13 of roughly circular shape with a lump 15 of material harder than that filling the envelope of the model breast. This protrudes through a circular hole 19 in the top plate 17. The lump 15 can be felt through the flexible part under correct palpation to give an impression of the feel of an abnormal breast. By rotating the mount 21 (or the insert 13) the position of the lump 15 can be changed. The insert 13 is made from rubber though plastic, perspex or acrylic or the like can be used.

The model therefore includes one movable lump (though more than one may be provided) mounted on the base unit and a number of fixed-position lumps within the prosthesis.

The base unit 1 is shown in more detail in Figures 3 and 4 and comprises a base part 31 provided at one end with a raised platform 33 which surrounds one edge of the rotatable wheel 21 mounted on spindle 29 which extends from the base part 31. The rotatable wheel 21 carries on its top surface a seat 35 for the replaceable insert 13.

The rotatable wheel 21 in this embodiment is freely rotatable around the spindle 29. In an alternative embodiment the spindle and wheel 21 are threaded so that rotation of the wheel not only changes the position of the lump 15 but also its height above the base and thus its feel through the flexible part 3.

CLAIMS

1. A breast palpation teaching aid comprising a flexible and deformable outer part modelling a female breast
5 and attached to a base over at least one lump of material, which is harder than that of said outer part, and is mounted on the base and movable to different positions on the base.

10 2. A breast palpation teaching aid comprising: a first part modelling a female breast and comprising a flexible envelope containing a deformable material and at least one lump harder than said material, and a second part forming a base to which the periphery of the envelope is attached.

15 3. A teaching aid according to claim 2 wherein part of the central region of the first part is not attached to the base whereby it can hang away from the base to model the shape and deformability of a natural breast.

20 4. A teaching aid according to claim 2 or 3 wherein the volume of deformable material in the envelope is 90 to 99% of the volume of the envelope.

25 5. A teaching aid according to claim 2 or 3 wherein the volume of deformable material in the envelope is 95 to 99% of the volume of the envelope.

30 6. A teaching aid according to claim 2, 3, 4 or 5 wherein the deformable material is silicone.

7. A teaching aid according to claim 6 wherein said first part is a breast prosthesis modified by removal of an amount of silicone.

8. A teaching aid according to claim 7 wherein 1
to 10% of the original volume of silicone is removed.

9. A teaching aid according to claim 7 wherein 1
5 to 5% of the original volume of silicone is removed.

10. A teaching aid according to any one of claims
2 to 9 further including at least one lump mounted on the
base and movable to different positions on the base.

10

11. A teaching aid according to claim 1 or 10
wherein the at least one base-mounted lump is eccentrically
disposed on a mount rotatably attached to the base.

15

12. A teaching aid according to claim 11 wherein
the base-mounted lump is formed on a replaceable insert
received by the mount.

13. A teaching aid according to claim 1, 10, 11
20 or 12 wherein the base-mounted lump is mounted on the base
such that its height above the base can be varied.

14. A teaching aid according to any one of the
preceding claims wherein at least part of the base is shaped
25 to represent the chest wall.

15. A teaching aid according to claim 14 wherein
the said part of the base is shaped to model the feel of the
rib-cage.

30

16. A teaching aid according to any one of the
preceding claims wherein one of said base includes a light
to illuminate one of said lumps.

35

17. A teaching aid according to claim 16 wherein the light is operable in response to palpation of the lump it illuminates.

5 18. A breast palpation teaching aid constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.